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US ARMY WAR COLLEGE
MILITARY STUDIES PROGRAM PAPER

KILLERS, FILLERS AND FODDER
INDIVIDUAL STUDY PROJECT
BY
COLONEL THOMAS A. HORNER
ARMOR



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AUTHOR: Thomas A. Horner, Colonel, Armor

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The current U.S. tank force is badly outnumbered by our potential adversary, the Soviet Union. We have not been able to offset this disadvantage by buying more tanks, or by improving our training or the quality of our tanks. The human factor has not been adequately considered, however, and perhaps it alone can provide us with a decisive advantage over our enemy. Currently, only a small percentage of our tank commanders would be truly effective in combat. We must select tank commanders who are intelligent enough to employ their weapon system to full advantage. They must be physically capable of performing their duties and they must possess the "killer" instinct necessary to win in battle. The Army should: raise the Armed Forces Qualification Test (AFQT) score standard for all tank commanders to Category II. All tankers should be required to possess good agility, hand-eye coordination, and manual dexterity. All tankers should also be required to have excellent vision and not wear glasses. Tests should be developed to predict combat effectiveness and only men who show a strong potential to be battlefield "killers" should be selected as tank commanders. Finally, the Army should consider replacing enlisted tank commanders with armor warrant officers who meet the high standards described above.

INTRODUCTION

Although our ability to deter Soviet aggression and expansionism is predicated on an array of strategies, weapons and other factors, our plans to actually confront the Soviets around the world if necessary, depend largely on our land combat capability. The principal ground weapon system on which we currently rely is the tank. Unfortunately, the balance of power in the armor arena is stacked heavily in favor of our major potential enemy.

U.S. VS SOVIET ARMOR

Quantity

There are many ways to look at the quantitative comparison of our armor force versus the Soviet armor force. You can compare total numbers of tanks, number of tanks in forward deployed units, numbers of tanks fielded by allies on both sides, annual tank production, potential tank production, rapid reinforcement capability, mid-range reinforcement capability, and so on. Regardless of the way you slice that pie however, we get the much smaller piece. In the best possible scenario, NATO force tanks in central Europe are outnumbered only by about 1.2 to 1 by those of the Warsaw Pact. This equation, however, fails to consider a Soviet buildup prior to hostilities and overlooks the reality that in a Warsaw Pact attack against central Europe the actual tank to tank battle ratios would probably exceed 5 to 1 at the point of attempt-

ted penetration. In other parts of the World where we might face the Russians, particularly in South West Asia, we expect an even more bleak picture.

Can we alter our quantitative disadvantage? No. Each of our new M-1 tanks will ultimately cost over 1.5 million dollars apiece, and the total production of M-1 tanks is only expected to be 7,000. In view of the high cost of the M-1, we will probably be fortunate if budget cuts don't force us to lower our total production or lengthen the number of years necessary to obtain enough tanks to equip our force.

Quality

For many years we have balanced the Soviet advantage in weapons quantity with our clear advantage in quality. We believed that our fewer number of superior tanks could at least hold their own against much greater numbers of inferior Russian tanks. That era is at an end.

While few would dispute that the M-1 tank is a modern sophisticated main battle tank, the best in the world or at least on a par with the best, those of us who have followed the Russians' progress with their newest tanks recognize that we no longer have the clear quality edge of years past. Our tank is superior in most ways, but theirs has the advantage in some areas, notably in frontal armor protection, smaller silhouette and armor defeating main gun ammunition. Whose tank is better? We think ours is. We do know that our tank will at least hold its own, but it is wishful thinking to continue to predict lopsided kill ratios based solely on our superior weapon system.

Training

If our equipment is only slightly better, can training then make the difference necessary to overcome the vast numbers we face? Probably

not. Although our armor training is outstanding, we would be naive to believe that our potential adversary is totally inept in training its armor forces for combat. In fact, the evidence indicates the contrary is true. Soviet training is not nearly as sophisticated as ours, but it does produce Russian tankers with a firm grasp of the basics necessary to be effective in combat. We do believe that our training will produce better trained crews than theirs, but certainly not so much better that we can expect training alone to close the quantity gap.

Tactics

Can tactics make the decisive difference? Since there is no way to answer that question with any degree of certainty, short of war, you will have to judge for yourself. Tactics obviously will weigh heavily in the outcome of any series of engagements. France was credited with having the finest land army in the world prior to World War II. Yet the German Blitzkrieg thoroughly destroyed the French Army in a matter of weeks. German tactics more than compensated for the French superiority in number of tanks deployed in that campaign.

During the mid-1970s, we introduced the "active defense" as our decisive tactic to impale the Russian "Bear." Less than a decade later, we have decided that perhaps the "active defense" doesn't work as well as we had expected. Today we are hearing about attacking and disrupting the second echelon concurrently with our engagement of the first echelon. Unfortunately, many experienced officers are apprehensive about this concept and believe that they will require all of the force available to stop the enemy's first echelon.

Although tactics may well be the decisive factor in any future conflict, I am most reluctant to believe that our numerical disadvantage

against the Soviets can be fully offset by our current tactical concepts, no matter how sound they may be.

There is one element, however, that we have yet to consider - the human factor.

THE HUMAN FACTOR

Selection of armor crewmen may well be the single most important aspect of armor combat effectiveness in any future conflict. The modern computer has unlimited capability to solve complex technical problems well beyond the ability of man. Yet, we all know and accept that a computer is no better than its input: "garbage in, garbage out". The fastest car in a race doesn't win unless the right driver is behind the wheel. In both of these cases, the right person must be selected to make full use of the potential of the machine. Training alone can not make the difference. If a person is not intelligent enough to understand how computers function, he can never be expected to use a computer to its best advantage. If a person is afraid of driving fast, or doesn't possess great hand-eye coordination, or doesn't have a winning instinct, he will never be a winning race car driver. The same philosophy holds true in any man-machine interface. No matter how good the machine is, if the man operating it is unable to exploit its potential, the machine will never be fully effective.

Will our current crews be effective with their new tanks? We have no way of knowing with any degree of certainty. Soldiers who possess the mental and physical prerequisites to fully accomplish their duties in combat can certainly be trained to perform these duties in peacetime. On the other hand, soldiers who do well in training may not be effective

in combat. Peacetime training, on the whole, is not a close approximation of combat. In combat, the soldier faces fatigue, danger and a host of psychological stresses not present in even the most arduous training environment. Peacetime training can be a discriminator, i.e., if a soldier can not perform his duties in training, he won't be able to do better in combat. Most training, however, has little predictive value. Marksmanship training is a good example. A soldier who is an excellent marksman on the range may fire wildly or not at all in combat.

The Tank Commander

In spite of the fact that we can't adequately evaluate the combat potential of any of our tank crew members, the focus must be primarily on our tank commander. He trains his crew for combat and is the key player in identifying any of his crew who are unable to do their job properly in combat. The tank commander can compensate for any weak member of his crew in peacetime and, to a certain extent in combat. On the other hand, while a crew can carry a weak tank commander in peacetime, they can not do it in battle. In battle, the burden of success or failure is totally on the tank commander. He must make all of the decisions. He must locate the enemy and present targets to the gunner. He must tell the driver which way to go and the loader which ammunition to load. The tank will behave as the tank commander behaves. If the tank commander is aggressive by nature, he will maneuver his tank in that manner. If he tends to be an overly cautious individual, his tank will perform the same way in combat.

Who are our tank commanders today, and are they the right men for their job? Officer tank commanders are obtained from the same sources as are the bulk of our officer corps. The majority are commissioned

from ROTC, a much lesser number are graduates of the U.S. Military Academy (USMA), and a few are Officer Candidate School (OCS) graduates. While USMA and OCS applicants must meet demanding admission standards, our only indication of the aptitude of ROTC graduates is the fact that they have obtained a college degree and have completed their ROTC training course.

Enlisted tank commanders normally have enlisted for Armor and have worked up to that position and grade after having held other crewmember jobs. All too often, they were not promoted primarily because of their advancement potential, but because they had amassed promotion points with time-in-service, time-in-grade and a coached performance before a promotion board. They have at least performed their duties at lower grades in an adequate fashion and were not severe disciplinary problems. Some are outstanding soldiers and some are not.

Enlisted soldiers are tested for intelligence upon entering the Army. Each must achieve at least Category IV or higher on the Armed Forces Qualification Test (AFQT). Brighter enlistees (those in AFQT Categories I and II), however, tend to enlist for technical skill training and relatively few enlist for Armor. Furthermore, a proportionally lower number of Category I and II armor crewmen reenlist after their first tour because they perceive more advancement potential in a civilian career. The result is a high percentage of enlisted tank commanders in AFQT Categories III and IV.

All armor crewmen, including officers, must meet the minimum physical standards required for combat arms soldiers. They must have reasonably good vision, but they may wear glasses. Agility, hand-eye coordination and manual dexterity are not tested.

Who they are, and the standards they must meet are not important as

long as they are able to perform effectively in combat. Far too often, however, we attempt to compensate for a demonstrated lack of ability with training. If one tank commander is less able than his peers, we give him more training. If a crew doesn't do well in a training evaluation, we comment on the crew's poor state of training. Unfortunately, more training is usually not the solution to the problem.

KILLER, FILLERS AND FODDER

The result of our failure to set high standards for selection of tank commanders is that most of our current tank crews will not be truly effective in combat. A few will be real killers and account for the bulk of the enemy tanks destroyed by our tanks; most will be fillers, simply maneuvering with the rest of the tanks and trying not to be destroyed themselves; and a number will be fodder, certain to be defeated within their first few encounters with the enemy.

S.L.A. Marshall, in his revolutionary book, Men Against Fire, observed that less than one American infantryman in four actually fired his weapon in combat in World War II.¹ Incredible. Yet all of these men had undergone at least basic training and had qualified with their weapon on a marksmanship firing range. In later writings, Marshall noted that more soldiers fired their weapon at the enemy in Korea than in WWII, but non-firers were still present in high numbers.² Since infantrymen and armor crewmen are from the same population and meet the same enlistment standards, their reaction to battlefield stresses and their relative effectiveness should be generally the same.

In 1958, the U.S. Army Leadership Human Research Unit, Presidio of Monterey, California published an analysis of combat fighters and non-

fighters, entitled "Fighter 1." The study attempted to pinpoint the basic differences between good and poor combat performers in the Korean War. It found that:

The fighter tended to be:

- (1) More intelligent
- (2) More Masculine
- (3) A "doer"
- (4) More socially mature
- (5) Preferred socially and in combat by his peers.

He also tended to have:

- (6) Greater emotional stability
- (7) More leadership potential
- (8) Better health and vitality (larger and heavier)
- (9) A more stable home life
- (10) A greater fund of military knowledge
- (11) Greater speed and accuracy in manual and physical performance.

The report also found that "...the qualities of fighters are potentially measurable and gives promise of the possibility of identifying fighters by appropriately developed tests."⁴ The study concluded that "...men who are low in intelligence tend to make poor fighters..." and "...when any combat branch is allocated a disproportionate share of men...who are low in intelligence, its fighting potential will be reduced."⁵

The Air Force "Ace"

A close parallel exists between the nature of combat experienced by Air Force fighter pilots and Army tank commanders. Each commands a complex weapon system with the prime mission of engaging and destroying similar enemy weapon systems. Each faces success or failure dependent upon his ability to acquire and accurately engage the opposing enemy weapon system before the enemy is able to accurately engage him.

If we accept that the nature of combat is roughly the same for the fighter pilot and the tank commander, it is reasonable to assume that

the type of individual who would be successful in combat as a fighter pilot would also be successful as a tank commander. It is also logical to believe that the combat performance of a group of fighter pilots would roughly parallel the battlefield performance of a group of tank commanders. Since no studies have been made of tank commander performance in combat, I have focused on the recorded combat performance of fighter pilots as an approximation of the expected performance of tank commanders.

In WWII, 5% of the 5000 Eighth Air Force fighter pilots who flew against the Germans during 1943-1945 accounted for 40% of the enemy aircraft shot down. In the Korean War, the results were almost exactly the same; i.e., 4.8% of our F-86 pilots garnered over 38% of the total enemy kills.⁶ Even when the analysis of fighter pilot effectiveness is narrowed to consider only fighter pilots with a large number of proven opportunities to kill, the results are similar. A small percentage of pilots (approximately 10%) achieve the bulk of the air-to-air kills. In both conflicts, over half the fighter pilots with some opportunity to score an air-to-air kill did not do so. In addition, there was no apparent reason for the disparity in combat effectiveness; the pilots presumably have met the same high standards to become fighter pilots, they had received the same training, and they flew the same missions. The only difference was some became "Aces" (killers), some scored a low number of kills or did not score at all (fillers), and some were themselves killed, usually in their first ten missions (fodder).⁷

The Air Force commissioned McDonnell Douglas to study the difference in effectiveness among fighter pilots in the mid-1970's. The final report of the year long study was published in April 1977. It concluded that "there are large individual differences in performance

which are significant even when comparable equipment is used."⁸ Further that "...some 45 factors...can be reasonably hypothesized to be of predictive value in identifying the combat effective air-to-air fighter pilot."⁹

Division Restructuring Study

During the latter part of 1977, the U.S. Army Training and Doctrine Command (TRADOC) conducted the battalion phase of the Division Restructuring Study (DRS) at Fort Hood, Texas. The overall study was designed to test a new optimum force structure for the 1980s. The battalion test phase was conducted to compare the performance of tank and mechanized battalions organized according to a test TOE against tank and mechanized battalions organized under the H-Series TOE. The test made maximum use of the TRADOC Combined Arms Test Activity (TCAIA) Field Instrumented System (TAFIS) to provide realism and to collect data on direct fire systems. TAFIS consisted of laser fire simulators and receivers mounted on tanks and TOE vehicles similar to the current MILES system. Preliminary training, TAFIS orientation training and the battalion test occupied each of the participating battalions for almost 90 days.

As a battalion commander of one of the four tank battalions involved, I was able to conduct my own TAFIS orientation training. During these training sessions, I noticed that a few of my crews were almost always successful in simulated combat engagements regardless of the odds, and others were almost always "killed." The same phenomena continued throughout the actual battalion test.

During the conduct of the test, each instrumented engagement was recorded and the results were compiled on a daily basis. It became my habit to inquire about my daily battalion results as often as possible

in order to congratulate crews with high kill ratios, and I noted that it was always the same 8-16 crews who were in competition.

TCATA analysts observed similar results with all eight battalions that participated in the test. During the course of the research for this article, I contacted the two test officers who were most involved at the time.^{10,11} They both confirmed that "approximately 20% of the instrumented vehicles accounted for about 80% of the kills." Further, with some exceptions, the biggest killers were the crews commanded by officers. According to the Chief Data Analyst, the officer-led crews killed almost twice as effectively as the Platoon Sergeant-led crews, and the other enlisted tank commander-led crews seldom killed at all.

A recent, eminently qualified guest speaker at the U.S. Army War College also discussed tank commander effectiveness. He noted the phenomenal kill ratios achieved by Gen. Abram's tank battalion during the Battle of the Bulge in WWII and an Israeli tank brigade on the Golan Heights during the most recent Arab-Israeli War. In both of these examples, the units had evidently taken severe losses, and at the point of their tremendous success all of their remaining tanks were commanded by officers. The speaker went on to say that he had become an advocate of smaller tank platoons simply to increase the ratio of tanks with officer tank commanders.

SCACE

In April 1981, TRADOC published the SCACE Study (Soldier Capability - Army Combat Effectiveness). The study was undertaken to examine a number of manpower issues, including an evaluation of the relationships between the capabilities of soldiers and the effectiveness of weapons, units and forces.

The study offers a valuable insight into the human factor in war.

As an example, the study states that:

...the performance of the opposing forces in the 1967 and 1973 Arab-Israeli Wars convincingly showed that the capabilities of the individual soldier largely determine the effectiveness of weapons and the tactics that are employed. Human factors were found to be the major determinates of the outcome of the battles fought during these wars.¹²

The study comments that:

...it would be foolhardy for us to believe that our qualitative advantage in hardware translates into a great enough edge in combat effectiveness of ground forces to compensate for the vast numerical superiority enjoyed by our adversaries.¹³

SCACE also discusses the selection of armor crewmen.

Our M-1 Abrams tank can be, as it was designed to be, the best fighting machine in the world; or it can equal the combat effectiveness of a big rock of the same size, depending on the capabilities of the soldiers who operate and maintain it.¹⁴

Finally, several other SCACE findings are especially relevant to this article.

The data from the reviewed literature overwhelmingly supports the premise that...soldier capabilities are a major determinant of the combat effectiveness of weapons, units, and forces.

The data also convincingly support the conclusions that the variables that determine soldier capabilities are identifiable, measurable, and useful for prediction of both noncombat and combat effectiveness of soldiers and weapons.

There is an essentially linear relationship between the combat and peacetime performance of soldiers and their mental abilities. High ability soldiers in proportion to their ability get greater effectiveness out of any weapon, simple or complex, and improve the overall combat and cost-effectiveness of the Army.¹⁵

The Gideon Criterion

A U.S. Army Recruiting Command Research Memorandum published in January 1982 has captured the interest of the Armor community. The memorandum, entitled "The Gideon Criterion: The Effects of Selection

Criteria on Soldier Capabilities and Battle Results" addresses the relationship between the intelligence of armor crewmen and tank gunnery results. The data used in the study analysis are the firing results from the 1981 Canadian Army Trophy (CAT) Competition held at Grafenwoehr, Germany in June 1981.

While the Gideon report contains several flaws in statistical analysis, it does present a strong case that the gunnery performance of a tank is highly related to the AFQT score of the tank commander. Further that "a significant relationship between tank commander AFQT and expected battle results has been established."¹⁶ A simple combat simulation conducted during the course of the analysis showed that one tank commanded by a tank commander with an AFQT Category II score could be expected to have the same kill ratio as six tanks commanded by tank commanders with AFQT Category IV scores.¹⁷

The Gideon report also states that:

Although the cost and difficulty of recruiting personnel with higher mental aptitude is significant, the consequences of not recruiting them could be more significant. If our efforts to "train to fight and win outnumbered" are taken seriously,¹⁸ the manpower quality of our tank force must be improved.

IMPROVE THE HUMAN FACTOR

The evidence is overwhelming. We have spent billions of dollars improving our armor equipment and practically nothing toward improving the quality of the men who operate it. We have a tank force that contains a small percentage of real killers, a great number of fillers, and considerable fodder. Too many of our tank commanders are not intelligent enough to fully exploit the capabilities of the machines they command, and too few possess the "fighter pilot ace" instinct necessary

to win on the battlefield.

We must upgrade the quality of our tank commanders if we expect to win any major ground war in the future. Our tank commanders must be intelligent, they must be physically fit for their job, and they must have a competitive, "killer" mentality.

The intelligence criterion is easy to establish. We can simply set AFQT Category II as the minimum standard for tank commanders, both officer and enlisted.

Physical requirements should also be higher for entrance into Armor. In addition to the current physical standards, all prospective tankers should be tested for manual dexterity, hand-eye coordination, and agility. They should also have to meet higher vision standards. Preferably they should be required to have 20/20 vision without glasses.

Finally, we should develop some means of identifying the "killer" instinct and select as tank commanders only those men who demonstrate that type of behavior pattern. Obviously, this is the most difficult problem concerned with upgrading the quality of tank commanders. No statistically reliable test for the "killer" instinct exists. We can and must, however, do better than we are now doing.

How can we fill our tank turrets with combat "killers"? If we establish a higher AFQT standard for tank commanders, we will have taken the first giant step. High intelligence seems to be a significant factor separating the combat fighter from the nonfighter. We can also administer stress tests to prospective tank commanders and eliminate any who show an inability to function well under stress. Another obvious discriminator is competitive behavior versus passive behavior. A soldier who has demonstrated his competitiveness through athletics or some

other endeavor should be a strong choice to be a tank commander over an individual who always avoids competitive situations. Even the use of an arcade type video game such as "Battle Zone" or "Pac Man" might prove useful in identifying prospective tank commanders who are competitive and aggressive. Finally, a number of psychological tests are available that could further assist in selecting those soldiers who would be more apt to win on the battlefield.

Numerous difficulties will have to be overcome to bring about a substantial increase in the quality of our tank commanders. Under our current personnel management and recruiting systems, the only way we can obtain quality enlisted tank commanders would seem to be to raise the enlistment standards for all Armor MOS. This, however, could only be accomplished at the expense of other MOS; if more AFQT Category I's and II's go into Armor, less will be available for other career fields.

Perhaps, then, a better method should be chosen. Little evidence exists to support the need to raise intelligence or aptitude standards for all tank crew members. It would be preferable, therefore, to continue recruiting armor crewmen to be drivers, loaders and gunners under current standards. All tank commanders could be acquired at the entry level, just as we currently obtain officer tank commanders at the entry level. Should they all be officers? No. We don't need or want that number of Armor officers at the Lieutenant level, and many of the pre-commissioning standards for officers are not particularly relevant for tank commanders.

Why not use Warrant Officer tank commanders? They could be recruited from a population of young men who would not otherwise be inclined to enlist. Career retention should be considerably better than with the Aviation Warrant program because Armor Warrants would not

perceive a ready market for trained and experienced tank commanders in the civilian sector. The costs to the Army should not be appreciably higher considering the relatively low numbers involved. A single, long Armor warrant officer candidate course would also be comparable to the training that enlisted tank commanders receive in the aggregate.

Other benefits could also accrue. Enlisted crewmen, while being denied the opportunity to become tank commanders without qualifying for and going through a warrant officer candidate course, could specialize as they advance in rank. At the E-5 or E-6 level, they could receive additional training as track vehicle mechanics or turret mechanics or master gunners or armor communications specialists. This training could replace current NCO courses designed to prepare them to be tank commanders. Just imagine the advantages of having one or two track vehicle mechanics, a turret mechanic, a radio repairman and a master gunner all within a tank platoon.

CONCLUSION

The main points of this article are:

- Our current tank force is badly outnumbered by our potential adversary.
- We have not been able to offset this disadvantage with technology, training or tactics.
- We have not adequately considered the human factor; perhaps it alone can provide us with a decisive advantage over our enemy.
- Only a small percentage of our current tank commanders would be truly effective in combat.
- Tank commanders must be selected who are intelligent enough to

employ our modern complex tanks to their maximum effectiveness, and who have the "killer" instinct necessary to win in battle.

This article is not intended to be an indictment of enlisted tank commanders or armor noncommissioned officers in any way. For the most part, they are dedicated, professional soldiers who are a credit to the United States Army. They work hard and they train hard. Most of them also eventually become competent peacetime tank commanders and some would be outstanding in combat as well. The majority, however, are just not intelligent enough to fully exploit their sophisticated tank in battle. When faced with the multitude of rapid decisions required, the confusion and danger, and the necessity to react immediately and violently to the ever-changing situation, they will not perform well enough to fight and win outnumbered.

The tank commander we must have is a winner. He must want to be the best at whatever he does. He must want to compete and he must be extremely good in a stressful, competitive environment. He must be an achiever, and a poor loser. He must be a "killer", not a "filler" or "fodder".

Most experienced armor commanders will agree with the points set forth in this article if they take the time to reflect on their past experience in armor units. They will recall a number of tank commanders who were outstanding in training and who could be counted on to do as well in combat. The memory of those tank commanders, however, will be vastly overshadowed by the recollection of the mediocre and the inept.

The challenge for the leadership of the Army is to react now to a deplorable situation that many armor officers have recognized intuitively for some time. The evidence is subjectively clear and is becoming apparent even statistically. The changes necessary will not be easy

or pleasant. The advantage to be gained, however, is too great to be ignored.

That we need smart soldiers who are not assumed but known, by themselves, by their compatriots, and their enemies, to be ready, willing, and able to fight, is a proposition easy enough to accept. The question that inevitably arises is: 'Can we afford it?' That is the wrong question.

The right question is: 'Can we afford not to?'¹⁹

ENDNOTES

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2. Marshall, S.L.A., Commentary on Infantry Operations and Weapons Usage in Korea, Winter of 1950-51.
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4. Ibid., p. 5.
5. Ibid.
6. Youngling, Edward W., et. al. Feasibility Study to Predict Combat Effectiveness for Selected Military Roles: Fighter Pilot Effectiveness, p. 1-8.
7. Ibid.
8. Ibid., p. 8-1.
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